REMARKS

This paper is submitted in reply to the Final Office Action dated June 18, 2007. A request for a two-month extension of time and a Request for Continued Examination (RCE) is being filed concurrently herewith. The period for response extends up to and includes November 18, 2007, and this paper is timely filed. Furthermore, Authorization for a Credit Card charge of $1,270.00 (including $460.00 for the two-month extension fee and $810.00 for the requisite RCE fee) is hereby included in the Electronic Fee Sheet attached. Reconsideration and allowance of all pending claims by the Examiner are therefore respectfully requested.

In the subject Office Action, claims 17-31 were rejected under 35 U.S.C. § 112 first paragraph, and claims 14-16, 31 and 34 were rejected under 35 U.S.C. § 112 second paragraph. Claims 17-31 were also rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 1-4, 6-32, 34, and 36 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,592,618 to Micka et al. (Micka), and claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Micka.

Applicant respectfully traverses the Examiner's rejections to the extent that they are maintained. Applicant has canceled claim 5, amended claims 1-4, 6-14, 17-32, 34, and 36, and added new claim 37. Applicant respectfully submits that no new matter is being added by the above amendments, as the amendments are fully supported in the specification, drawings and claims as originally filed.

As an initial matter, Applicant thanks the Examiner for his consideration in granting a personal interview with the undersigned on October 17, 2007. In the interview, proposed amendments to the claims were discussed, and the Examiner indicated that the proposed claims (which are consistent with the amendments made in this paper), addressed all outstanding rejections.

Now turning to the subject Office Action, and initially to Examiner's § 112 rejection of claims 17-31, the Examiner will note that Applicant has amended independent claims 17 and 31 to change "computer readable medium" to "recordable type media" as per the Examiner's suggestion. Applicant has also amended dependent claims 18-19 and 21-30 in a similar manner. Additionally, Applicant submits that the Examiner's § 101 rejection has been traversed through the foregoing amendments. Withdrawal of the § 101 and § 112 rejections to claims 17-31 are therefore respectfully requested.

Next turning to the Examiner's § 112 rejection of claims 14-16, 31, and 34, the Examiner will note that Applicant has amended claims 14, 31, and 34 to clarify that each group has "an order dependency relative to one another". Additionally, Applicant has amended claims 14, 31, and 34 to clarify that the update requests in each group have no order dependency relative to one another, and are capable of being processed concurrently, support for which may be found, for example, at paragraph [0012] of the published application. Applicant submits that the amendments to claims 14, 31, and 34 address the Examiner's objections, and withdrawal of the § 112 rejections to claims 14-16, 31, and 34 is respectfully requested

Now turning to the art-based rejections, Applicant notes that claims 1-4, 6-32, 34, and 36 are rejected at least in part on the Micka reference. Turning specifically to amended independent claim 1, this claim has been amended to generally recite a method for updating data at a backup system that tracks updates made to a primary system. The method includes creating a first group including a first plurality of update requests, the first plurality of update requests in the first group having an order dependency relative to a second plurality of update requests in a second, subsequent group, with the update requests in each of the first and second groups capable of being processed concurrently and without regard for order relative to one another. The method also includes concurrently completing the first plurality of update requests of the first group, and after concurrently completing the first plurality of update requests, concurrently completing the

second plurality of update requests of the second group. Several of the claims that depend from claim 1 have also been amended for consistency with the amendments to claim 1.

Micka fails to disclose the above claimed features. As discussed in the interview, Micka requires that the updates in a consistency group be processed synchronously and in a particular order. For example, col. 9, lines 50-63 discloses that for a consistency group, a "sequence number within group" identifier 504 is provided within each header for a record set, along with an identifier 505 for the primary storage controller that issued the update. Col. 10, lines 27-35 also makes it clear that each record set in a consistency group includes a sequence number so updates can be copied at a backup site "in the same order they were written at the primary DASDs." The same passage also states that the consistency groups are "across all records sets collected from all storage controllers." Col. 11, lines 25-35 further states that "[a]fter all read record sets across all primary storage controllers 405 for a predetermined time interval are received at the secondary site 431, the SDM 414 . . . applies the received read record sets to the secondary DASDs 416 in groups of record updates such that the record updates are applied in the same sequence that those record updates were originally written on the primary DASDs 406.

Fig. 6, and the discussion at col. 11, line 47 to col. 12, line 41, also makes it clear that the record sets in a consistency group are processed in a particular sequence. The only discussion of updates being arbitrarily organized is found at col. 12, lines 15-19, which handles when two updates have the same time stamps, but since equal time stamps effectively means that no specific sequence can be ascertained for those two updates, no sequence could be applied as between those two updates. Of note, however, those two updates would still be sequenced between earlier and later time stamped updates in the same group, and the disclosure makes it clear that such "ties" should be rare based upon the resolution of the sysplex timer (see col. 12, lines 10-12). The consistency groups in Micka therefore do not include update requests that all can be completed concurrently and without regard to order, as is required by claim 1.

The Examiner also relies on col. 11, lines 35-46, regarding the formation of consistency groups. One assumption that is discussed is that application writes that are independent can be performed in any order; however, the passage also makes it clear that such writes "can be performed in any order if they do not violate controller sequence order." As such, a specific order is still required for independent writes in a consistency group. Another assumption refers to dependent writes, and it is important to note that for such dependent writes, they must be in order, are there is no indication in this passage that such dependent writes have to be in separate consistency groups, so it appears from the passage that dependent writes (which have to be processed in order) can be in the same consistency group. Micka consequently does not disclose groups where the requests within each group can be processed concurrently and without regard to order.

Applicant therefore respectfully submits that Micka fails to disclose or suggest each and every feature of claim 1, and that claim 1 is novel and non-obvious over the reference. Reconsideration and allowance of claim 1, and of claims 2-13 and 36 that depend therefrom, are respectfully requested.

Next, with regard to the rejection of independent claim 14, this claim as amended generally recites a method for updating data at a backup system that tracks updates made to a primary system. This method includes synchronously processing a plurality of groups of update requests, the plurality of groups having an order dependency relative to one another, with the update requests in each group being capable of being processed concurrently and without regard for order relative to one another; and asynchronously processing the update requests in each group.

As discussed above in connection with claim 1, Micka does not disclose processing groups where the update requests within each group are capable of being processed concurrently and without regard for order relative to one another. Furthermore, Applicant submits that Micka does not disclose the concept of processing groups synchronously, while processing the update requests within each group asynchronously.

As noted above, the record sets within the consistency groups in Micka are processed in order based upon timestamp, which is not asynchronous in nature.

Applicant therefore respectfully submits that Micka fails to disclose or suggest each and every feature of claim 14. Reconsideration and allowance of claim 14, and of claims 15-16 that depend therefrom, are therefore respectfully requested.

Next, with regard to independent claims 17 and 32, each of these claims has been amended in a similar manner to claim 1, and each recites in part the concept of groups that have an order dependency relative to one another, with the update requests within each group being processed concurrently and without regard to order. Claims 18-30 have also been amended for consistency with the amendments to claim 17. As discussed above in connection with claim 1, this combination of features is not disclosed or suggested by Micka, and as such, claims 17 and 32 are novel and non-obvious over Micka. Reconsideration and allowance of claims 17 and 32, and of claims 18-30 which depend therefrom, are therefore respectfully requested.

Next, with regard to independent claims 31 and 34, each of these claims has been amended in a similar manner to claim 14, and each recites in part the concept of synchronously processing groups that have an order dependency relative to one another, while asynchronously processing the update requests within each group due to the fact that the update requests within each group are capable of being processed concurrently and without regard to order. As discussed above in connection with claim 14, this combination of features is not disclosed or suggested by Micka, and as such, claims 31 and 34 are novel and non-obvious over Micka. Reconsideration and allowance of claims 31 and 34 are therefore respectfully requested.

As a final matter, the Examiner will note that Applicant has added new claim 37, which depends from claim 1 and additionally recites that each update request is generated by an application from among a plurality of applications, the first group includes a first update request generated by a first application among the plurality of applications, and the

additional step of creating the second group in response to the first application generating a second update request. As such, each group is permitted to include at most one update request for a particular application. Applicant submits that Micka and the other prior art of record does not disclose this additional feature, and as such, claim 37 is additionally patentable based upon this additional feature.

In summary, Applicant respectfully submits that all pending claims are novel and non-obvious over the prior art of record. Reconsideration and allowance of all pending claims are therefore respectfully requested. If the Examiner has any questions regarding the foregoing, or which might otherwise further this case onto allowance, the Examiner may contact the undersigned at (513) 241-2324. Moreover, if any other charges or credit are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

October 22, 2007
Date

/Scott A. Stinebruenr/
Scott a. Stinebruner
Reg. No. 38,323
WOOD, HERRON & EVANS, L.L.P.
2700 Carew Tower
441 Vine Street
Cincinnati, Ohio 45202
Telephone: (513) 241-2324
Facsimile: (513) 241-6234